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Development and validation of the Chinese Death Metaphors Scale-Revised

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ABSTRACT

Chinese people tend to use metaphorical expressions and rhetorical figures to convey meanings and emotions, and they usually talk about death implicitly. The assessment of death metaphors and images can provide a better understanding of Chinese personal perceptions of death. This study aimed at modifying the Chinese Death Metaphors Scale (CDMS; Cheung, 2005) and establishing one that is more suitable for Chinese people. Thirty-one death metaphor statements in Chinese were created from items of CDMS and an open questionnaire study. The item pool was tested with 425 participants and exploratory factor analysis revealed four factors (Comfortable/Painful/Sorrowful/Empty), differing with the two-factor structure (Positive/Negative) of the original CDMS. On the basis of this, a 24-item Revised Chinese Death Metaphors Scale was generated. It was carried out to 473 participants together with Templer's Death Anxiety Scale (DAS) for Confirmatory factor analysis, which revealed an acceptable model fit: $\chi^2/df = 4.05$, goodness-of-fit index = .85, adjusted goodness-of-fit index = .82, incremental fit index = .90, nonnormed fit index = .90, comparative fit index = .90, root mean square error of approximation = .08, all met the criteria standards for adequacy of fit. Construct validity, criterion-related validity with DAS, and composite reliability were all acceptable and reasonable. The Chinese Death Metaphors Scale-Revised is satisfactory and reliable and more suitable than previous instruments for use with Chinese people.

In primitive societies, people tend to consider and explore the world by means of poem and image, with metaphoric understanding and expression of ideas (He & Hu, 2007). It has been argued that Xiang—or image—thinking best describes the traditional thinking model of Chinese people, which is different from Western conceptual or rational thinking (Wang, 2004). Chinese characters, calligraphy, and traditional medicine are all based on the traditional idea of “exhausting the meaning through images.” Chinese people also tend to use death metaphors to express ideas and attitudes toward death instead of talking about death directly. In the present study, *death metaphor* is defined as the expression of personal death meaning using symbolic forms.

Differing from previous self-report death attitude inventories, Riley (1970) proposed another method of accessing people's attitudes toward death and found that even though people didn't always talk about death directly they would express it metaphorically, such as “death is like a long sleep,” “to die is to suffer,” and “sometimes death is a blessing.” Some researchers have

also stated that a person's metaphorical understanding of death is an important indicator of personal death attitudes (McLennan, Akande, & Bates, 1993; Ross & Pollio, 1991). Death metaphors may help convey the death concepts that are difficult to express by words and can better reveal unconscious attitudes and anxiety toward death (McLennan et al., 1997).

Several scales have been developed in line with these premises to measure imagery and emotions surrounding death, including the 20-item Death Imagery Potency Scale (Lynch, 1976) and the Fantasy Level Fear of Death Scale (FLFDS) (Feifel & Nagy, 1981). Building on the FLFDS, McLennan et al. (1997) subsequently developed the 18-item Revised Death Fantasy Scale (RDFS), which consists of Positive and Negative death metaphor subscales of nine items each. For example, “home coming” is a positive death metaphor, whereas “a cold long journey” is a negative one. Participants were asked to rate on a 5-point Likert scale, the extent to which each item describes their personal death metaphor.

Kübler-Ross (1975) proposed that cultures differ in their ways of explaining and giving meaning to

death, and Florian & Snowden (1989) considered religious beliefs and ideology to be important determinants of the level of death-related anxiety. Cross-cultural studies comparing Western death attitudes with those of Asian cultures have shown that individuals in Asia tend to report lower levels of death anxiety (Schumaker, Barraclough, & Vagg, 1988). Given these findings, it seems likely that some items included in the original RDFS may not be relevant to Chinese culture.

Ho (2001) conducted the first studies of death-related images among Chinese people. He invited 53 health care professionals to draw a picture according to their personal impression of death and found that some of the pictures were similar to the ancient Chinese character 死. Later, Cheung and Ho (2004) selected 12 new death metaphors from these pictures and merged them with RDFS to create thirty death metaphor statements, which were then administered to 100 undergraduates in Hong Kong. Results showed that seven out of the 10 lowest scored items were from RDFS, and the correlation between two subscales of RDFS and Templer's Death Anxiety Scale (DAS) were not significant. Moreover, seven out of the 10 highest scored items were newly-developed items with "interpersonal orientation," including "A separation from the loved one," "A thankful goodbye," and "People crying around my bed." Further research tested 104 undergraduates from Hong Kong University and 242 undergraduates from Tsinghua University with this new Chinese version of the 30-itemed personal death metaphor questionnaire and DAS (Cheung, 2005). Factor analysis generated an 18-item Chinese Death Metaphors Scales (CDMS) with two nine-item subscales: the Positive Metaphors and the Negative Metaphors.

However, given the narrow sampling for studies to date with all participants students at Hong Kong University or Tsinghua University, the wider validity of the CDMS remains untested. While all previous studies (Cheung, 2005; Cheung & Ho, 2004; McLennan et al., 1997) have demonstrated a two-factor model (i.e., Positive and Negative subscales) for each death metaphor scale, classifying death metaphor items into positive and negative types seems overly simplistic and ignores many other dimensions.

To examine the validity of CDMS and whether this model is applicable in China, 152 Chinese people were recruited and carried out with CDMS. Exploration factor analysis was conducted using maximum likelihood estimation and promax rotation. Eigenvalues yielded a steep decline between the five and six factor suggesting a five-factor solution according to the scree criterion,

which was in contradiction with the original two-factor model. Which kind of factor model is applicable for Chinese demands further exploration.

The present study approaches this matter of validation by opening up the scale to a wider range of culturally appropriate death metaphors, including a wider age-range of participants, and an exploration of the resulting factor structure. Thus the objective is to compose a revised CDMS which is more relevant to assess the personal meaning of death among Chinese people.

Study 1

Method

Participants

Participants were recruited completely randomly on the internet. A total of 232 Chinese persons (100 male, 132 female) from five provinces (Guangdong, Hubei, Tibet, Jiangsu, and Sichuan) participated. The age ranged from 16 years to 56 years ($M = 25.55$ years, $SD = 5.79$ years). Ethnic composition of the sample was as follows: Han (60.34%), Hui (19.40%), Tibetan (12.50%), Tujia (5.17%), Manchu (0.86%), Mongol (0.86%), Xibe (0.43%), and Dong (0.43%).

Measures

An open-ended question on death images was formulated for this study. Participants were asked to provide open-ended written responses to the following question: "When talking about death, how will you describe it with metaphors and images?"

The CDMS (Cheung, 2005) contains two subscales, nine positive death metaphors (e.g., A peaceful garden), and nine negative death metaphors (e.g., A thick fog).

Procedure

Responses to the open-ended question on death images were then screened and classified by a group of 10 researchers, made up of psychologists and philologists. Death metaphors occurring seven or more times were collected, which is based on the total circumstance of death metaphor and researchers' discussion.

Results

Thirty-three death metaphor items were generated in all, 15 of which occurred seven or more times. Two of these metaphors ("people crying around my bed" and "a sweet sleep") were present in the existing CDMS and 13 metaphors were new. These 13 were therefore added to CDMS, making up a 31-item scale used in Study 2.

Study 2

Method

Participants

Participants were recruited completely randomly. A total of 425 Chinese persons (175 male, 250 female) from eight provinces (Guangdong, Zhejiang, Heilongjiang, Jiangxi, Beijing, Shanghai, Jiangsu, and Sichuan) participated. The age ranged from 14 years to 56 years ($M = 27.04$ years, $SD = 6.91$ years). Ethnic composition of the sample was as follows: Han (67.06%), Hui (10.59%), Manchu (5.88%), Mongol (5.41%), Tibetan (5.18%), Qiang (2.35%), Tujia (1.88%), Xibe (0.71%), Dong (0.47%), Bouyei (0.24%), and Tu (0.24%).

Measures

The 31-item scale was generated from the Study 1. The items were rated on 5-point scales ranging from 0 (*not at all*) to 5 (*quite well*).

Procedure

Participants filled in the scale on the internet (<http://www.sojump.com/>) and submitted it on line. Then the item analysis and exploratory factor analysis were conducted with SPSS 19.0. Items were dropped from the analyses if the factor loading was less than .40 or if the correlation coefficient with total score was less than .40 or if the communality was less than .30. The principal component analysis with varimax rotation was carried out to explore the factor structure.

Results

The Kaiser-Meyer-Olkin Measure of Sampling Accuracy was equal to .86, indicating an adequate sample size for factor analysis. Bartlett's test of sphericity was also significant ($p < .001$). Synthesizing parallel analysis, principle component analysis and scree plot, four factors were extracted indicating this scale was best fitted to a four-factor model rather than the original two-factor model (Table 1). Total explained variance of these four factors was 49.54%, which is higher than the original CDMS. The revised CDMS (CDMS-R) was reduced from 31 to 24 items. Seven items—"the light," "utter darkness, silent and frigid," "crows or vultures," "separation from loved ones," "tightly closing eyes," "fallen leaves return to the roots," "a blank,

endless nothingness"—are new metaphors not included in the original CDMS. Factor loading suggested a strong loading ($> .40$) on the intended factor (Table 2).

The factors were named based on emotions and feeling-tones evoked by these images, eight items for the *Comfortable* factor (Items 5, 13, 14, 15, 18, 19, 22, 26), seven items for the *Sorrowful* factor (Items 3, 6, 7, 9, 10, 11, 12), and six items for the *Empty* factor (Items 8, 21, 23, 24, 30, 31), and three items for the *Painful* factor (Items 27, 28, 29). The principal component analysis with orthogonal rotation was carried out to explore each factor's structure. Only one factor was extracted of four factors each, and the accumulative explained variance was respectively 48.80% (*Comfortable*), 39.65% (*Sorrowful*), 41.65% (*Empty*), and 64.63% (*Painful*), which was acceptable.

Study 3

Method

Participants

Participants were recruited randomly. A total of 473 Chinese people (182 male, 291 female) ranging from 14 to 62 years of age ($M = 30.08$ years, $SD = 7.93$ years) from more than 10 provinces. Ethnic composition of the sample was as follows: Han (76.53%), Hui (5.71%), Tibetan (4.86%), Mongol (3.17%), Zhuang (2.54%), Manchu (2.11%), Tujia (1.90%), Qiang (1.27%), Dong (1.06%), Bouyei (0.21%), Tu (0.21%), Korean (0.21%), and Xibe (0.21%).

Measures

DAS was used in the present study. It consists of 15 true-false questions to tap the death anxiety level of participants. Questions 2, 3, 5, 6, 7, and 15 are reverse scored. The DAS score is calculated by summing the score of the 15 items after reversal (Templer, 1970).

CDMS-R is created and described in Study 2. The 24 items are rated on 5-point scales ranging from 0 (*not at all*) to 5 (*quite well*).

Procedure

Participants filled in the scale on the internet (<http://www.sojump.com/>) and submitted it on line. The confirmatory factor analysis was conducted using maximum likelihood estimation to confirm the four-factor model's validity with LISREL8.7, and

Table 1. Comparing eigenvalue from principle component analysis and parallel analysis ($n = 425$).

| Factor | 1 | 2 | 3 | 4 | 5 | 6 | ... | 24 |
|--|------|------|------|------|------|------|-----|------|
| Eigenvalue from principle component analysis | 5.30 | 3.33 | 1.85 | 1.41 | 1.00 | 1.00 | ... | 0.30 |
| Average eigenvalue from parallel analysis | 1.46 | 1.38 | 1.33 | 1.28 | 1.24 | 1.20 | ... | 0.62 |

Table 2. The revised Chinese Death Metaphors Scale factor loadings and communalities.

| Death metaphor (item number) | Orthogonal rotation method to factor loading | | | | Communality |
|--|--|-----------|-------|---------|-------------|
| | Comfortable | Sorrowful | Empty | Painful | |
| A smooth breeze (13) | .81 | | | | .65 |
| A clear crisp morning (26) | .75 | | | | .60 |
| A great adventure (19) | .71 | | | | .52 |
| Comforting parents (15) | .69 | | | | .51 |
| A reunion of families and friends (14) | .68 | | | | .48 |
| The light (22)※ | .64 | | | | .46 |
| A deserved holiday (5) | .63 | | | | .41 |
| A peaceful garden (18) | .57 | | | | .46 |
| Utter darkness, silent and frigid (11) ※ | | .70 | | | .56 |
| A thick fog (7) | | .68 | | | .56 |
| A cold lonely journey (3) | | .67 | | | .47 |
| A high stone wall (9) | | .62 | | | .46 |
| People crying around my bed (6) | | .51 | | | .34 |
| Crows or vultures (12) ※ | | .50 | | | .41 |
| Separation from loved ones(10) ※ | | .43 | | | .34 |
| A sweet sleep (21) | | | .72 | | .54 |
| Tightly closing eyes (23) ※ | | | .71 | | .56 |
| Fallen leaves return to the roots (31) ※ | | | .58 | | .39 |
| A blank, endless nothingness (24)※ | | | .54 | | .42 |
| An empty bed (30) | | | .53 | | .56 |
| The flat electrocardiogram (8) | | | .40 | | .31 |
| A hammer blow (29) | | | | .83 | .71 |
| A broken heart (28) | | | | .72 | .57 |
| A devouring tiger(27) | | | | .68 | .61 |
| Explained variance | 17.22 | 11.94 | 10.72 | 9.65 | 49.54 |

Note. ※ refers to newly developed items collected from the open questionnaires.

criterion-related validity and composite reliability (ρ_c) were conducted too.

Results

Standard factor loading of all items was between .33 and .80 (Table 3), and fitting indexes were $\chi^2/df=4.05$, comparative fit index (CFI) = .85, adjusted goodness-

of-fit index = .82, incremental fit index (IFI) = .90, non-normed fit index (NNFI) = .90, CFI = .90, root mean square error of approximation (RMSEA) = .08 which meet the following criteria: $1.00 < \chi^2/df < 5.00$, RMSEA $< .08$, and CFI/NNFI/IFI $> .90$ (Wu, 2009). The results showed the fit indices of the CDMS-R passed the relevant criteria and CDMS-R provided moderate but acceptable fit.

Table 3. Confirmatory factor analysis results abstract.

| Factor | Items (item number) | λ | t | SMC | ρ_c |
|-------------|--|-----------|-------|-----|----------|
| Comfortable | A deserved holiday (2) | .44 | 9.31 | .19 | .84 |
| | A smooth breeze (10) | .72 | 16.95 | .52 | |
| | A reunion of families and friends (11) | .66 | 14.94 | .43 | |
| | Comforting parents (12) | .66 | 15.07 | .44 | |
| | A peaceful garden (13) | .59 | 13.20 | .35 | |
| | A great adventure (14) | .56 | 12.33 | .32 | |
| | The light (16)※ | .63 | 14.23 | .40 | |
| Empty | A clear crisp morning (19) | .73 | 17.11 | .53 | .71 |
| | The flat electrocardiogram (5) | .54 | 11.12 | .29 | |
| | A sweet sleep (15) | .45 | 9.06 | .20 | |
| | Tightly closing eyes (17)※ | .66 | 14.06 | .43 | |
| | A blank, endless nothingness (18)※ | .61 | 12.80 | .37 | |
| | An empty bed (23) | .63 | 13.52 | .40 | |
| | Fallen leaves return to the roots (24) | .34 | 6.69 | .12 | |
| Sorrowful | A cold lonely journey (1) | .58 | 12.61 | .34 | .71 |
| | People crying around my bed (3) | .33 | 6.71 | .11 | |
| | A thick fog (4) | .36 | 7.34 | .13 | |
| | A high stone wall (6) | .47 | 9.90 | .22 | |
| | Separation from loved ones (7)※ | .45 | 9.38 | .20 | |
| | Utter darkness, silent and frigid (8)※ | .80 | 18.56 | .63 | |
| | Crows or vultures (9)※ | .56 | 12.08 | .32 | |
| Painful | A devouring tiger (20) | .53 | 10.59 | .28 | .67 |
| | A broken heart (21) | .76 | 15.39 | .58 | |
| | A hammer blow (22) | .60 | 12.14 | .36 | |

Note. ※ refers to newly-developed items collected from the open questionnaires. λ is Standardized Solution, SMC is Squared Multiple Correlation, all coefficients arrived significant statistically ($P < .05$).

Table 4. Correlation coefficients of different factors of the revised Chinese Death Metaphors Scale and Templer's Death Anxiety Scale (DAS).

| Measure | Comfortable | Sorrowful | Empty | Painful |
|---------|-------------|-----------|-------|---------|
| DAS | -.16** | .34** | .17** | .15** |


** $p < .01$.

Table 3 shows composite reliability (ρ_c) of four factors of CDMS-R which were all above .60, which is acceptable (Wen & Ye, 2011).

Table 4 shows the criterion-related validity of the CDMS-R. Four subscales all correlated significantly ($p < .01$) with the DAS score in the expected direction.

Discussion

By contrast to the 18-items of both the RDFS and the CDMS, the CDMS-R is composed of 24 items: twelve from the original RDFS, five from the newly developed items of the CDMS, and seven derived from the open questionnaires in Study 1. This increase in items can provide a more detailed assessment of personal death metaphor. In Study 3, the two highest scored items ("Separation from the loved one" and "Fallen leaves return to the roots") were newly developed, which reveals idiosyncratic qualities of the thanatopsis of Chinese people.

Chinese are deeply influenced by Confucian and Taoist culture. Confucian culture attaches great importance to ethical interpersonal relationships and family-centered standards, and it emphasizes that personal death is closely bound up to family survival (Jin, 1999). The ancient Chinese character for death is  in Oracle, which depicts a person weeping kneeling down beside the body of the deceased. It reveals three meanings of death: loss, grief and mourning (Cheung & Ho, 2004), and this is also the image and emotion conveyed by "separation from the loved one" which is the most endorsed death metaphor.

In addition, previous studies have revealed that Hong Kong Chinese people are more concerned about the reaction of others in the grieving process, and this may represent the "interpersonal oriented" style of Chinese people (Ho, Chow, Chan, & Tsui, 2002). For Chinese, death is not only a personal matter but also a clan affair. According to Confucian culture personal life is a part of clan life, so a person's death means the separation from the current family on one hand and the union with the deceased on the other hand. The death metaphor "Fallen leaves return to the roots" is deeply rooted in mind of Chinese people, which also reveals the deep influence of the concept of family.

Both CDMS and CDMS-R provided moderate but acceptable χ^2/df levels, since the value was below 5 (Wu, 2009). Goodness-of-fit index was used to describe how well the model fits a set of observation—with the bigger the values given, the better the model. The revised version of the CDMS proved to be preferable in this regard. RMSEA was used to avoid issues of sample size by analyzing the discrepancy between the hypothesized model, with optimally chosen parameter estimates, and the population covariance matrix—with the smaller values indicating better model fit, the revised version also gave better values. According to Marsh, Balla, and McDonald (1988), when taking CFI into account which are not impacted by sample size, the revised version yielded a distinctively better fit.

The results generated a four-factor solution explaining 49% of the variance, while the 2-factor CDMS's total explained variance was 39%. This discrepancy might be due to the death metaphor's richness and the participant's diversity. People's attitudes toward death are very complicated, thus the four factors Comfortable/Painful/Sorrowful/Empty can represent and cover the death metaphors better. Moreover the sample groups of previous researches were participants from Western countries or from Hong Kong and Tsinghua Universities which seems too limited, and this may also have contributed to the two-factor model of RDFS and CDMS. The larger sample of different age ranges from different areas of China in the present studies can reveal more dimensions of death metaphors. More studies will be required before factor structure for the CDMS-R could be confirmed.

The reliability of CDMS-R, represented by composite reliability, proved to be good, whereas the reliability of CDMS and RDFS is also acceptable. Four factors' composite reliability of CDMS-R was .84 (Comfortable), .71 (Empty), .71 (Sorrowful), and .67 (Painful), whereas internal consistency coefficient α of CDMS is .84 (positive) and .74 (negative), respectively, and α of RDFS is .83 (positive), .77 (negative; Cheung, 2005). Reliability of these three scales is all acceptable.

Regarding criterion-related validity, correlation coefficient of CDMS-R and DAS is, respectively, -.16 (Comfortable), .34 (Sorrowful), .17 (Empty), and .15 (Painful); the correlation coefficient of CDMS and DAS is -.21 (positive) and .23 (negative); the correlation coefficient of RDFS and DAS is -.19 (positive) and -.28 (negative; Cheung, 2005). All are significant ($p < .01$). The criterion validity of CDMS-R is relatively good. What's interesting is that the Empty subscale of CDMS-R is found to be positively correlated with the DAS score.

Some limitations in this study need to be addressed, including the relatively small size of the study sample,

for a larger sample size is likely to more clearly reveal the impacts of the new version. In addition, the sample group consists of different ethnicities, cultures, and ages, which lacks representativeness. Subsequent investigations should be conducted with specific ethnicities and age range groups.

Conclusion

Our studies revised and expanded the original CDMS to generate an indigenously derived personal death metaphor scale with four factors of Comfortable, Painful, Sorrowful, and Empty, which demonstrated a better level of validity and reliability. The data collected in the present may serve as a useful tool for future studies of death metaphor among Chinese people.

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